Key to CMIP5 "historicalMisc" Simulation Forcing

(many thanks to Gavin Schmidt who prepared the tables and the modeling groups who provided input)

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The CMIP5 experiment identified as "historicalMisc" calls for simulations forced by various combinations of anthropogenic or natural agents. These simulations are meant to be less realistic than the "historical" runs, which include all forcings thought to be important. The "historicalMisc" simulations provide information about the relative importance of different forcings during the historical period.

The tables below indicate which forcings are included in each of the "historicalMisc" simulations. The forcing information is organized in two different ways. In Table 1 the different simulations are grouped by model and detailed notes listing the forcings are provided. In Table 2 all models with a common set of forcings are grouped together. Table 2 only includes experiments carried out by more than one model and omits simulations forced by a unique combination of agents.

For each set of forcings, a different "p" value is assigned in the "rip" identification of the ensemble member. Although "p" values are uniquely defined within one model's ensemble of runs, the same number may refer to different forcings from one model to the next. This is what makes it necessary to provide a key. More information about the "rip" identifiers can be found in the CMIP5 controlled vocabulary document at cmip5_data_reference_syntax.pdf .

Table 1. "historicalMisc" simulations grouped by model.

Model Name	rip number	Simulation shorthand**	Metafor simulation name	Access	Notes
GFDL-ESM2M	r1i1p2	Ant	historicalMiscHCH esm2m	now	GHG, SD, Oz, LU, SS, BC, MD, OC GHG includes CO2, CH4, N2O, CFC11, CFC12, HCFC22, CFC113
GFDL-ESM2M	r1i1p3	NoLU	historicalMiscHCP esm2m	now	GHG, SD, Oz, Sl, Vl, SS, BC, MD, OC GHG includes CO2, CH4, N2O, CFC11, CFC12, HCFC22, CFC113
GFDL-ESM2M	r1i1p4	NoLU	historicalMiscHEP esm2m	now	GHG,SD,Oz,Sl,Vl,SS,BC,MD,OC GHG includes anthro CO2 emissions, CH4, N2O, CFC11, CFC12, HCFC22, CFC113
GFDL-ESM2M	r1i1p5	AA	historicalMiscHOA esm2m	now	SD, SS, BC, MD, OC
GFDL-ESM2M	r1i1p6	LU	historicalMiscHOL esm2m	now	
GFDL-ESM2M	r1i1p7	Sl	historicalMiscHOS esm2m	now	
GFDL-ESM2M	r1i1p8	Vl	historicalMiscHOV esm2m	now	
CanESM2	r[1-5]i1p2	LU	historicalLU	now	
CanESM2	r[1-5]i1p3	Sl	historicalSl	now	
CanESM2	r[1-5]i1p4	AA	historicalAA	now	
CSIRO-Mk3.6	r[1-10]i1p1	Ant	historicalMisc	now	All anthropogenic forcings (GHG, Oz, AA)
CSIRO-Mk3.6	r[1-10]i1p2	NoOz	historicalMisc	now	All forcings except ozone (trop. and strat. ozone concentrations fixed)
CSIRO-Mk3.6	r[1-10]i1p3	NoAA	historicalMisc	now	All forcings except anthropogenic aerosols and the indirect effect of AA on snow albedo
CSIRO-Mk3.6	r[1-10]i1p4	AA	historicalMisc	now	Anthropogenic aerosols including the indirect effect of AA on snow albedo

Model Name	rip number	Simulation shorthand**	Metafor simulation name	Access	Notes
CSIRO-Mk3.6	r[1-10]i1p5	AntNoAA	historicalMisc	now	The same as NoAA (AA is fixed at pre-industrial levels), except that AA emissions are allowed to vary in the Asian region [10˚S-45˚N x 65˚E-150˚E].
CSIRO-Mk3.6	r[1-10]i1p6	Vl	historicalMisc	July 2012	Volcanic forcing only
GFDL-CM3	r[135]i1p1	AA	historicalMisc Aer cm3	now	direct+indirect, from emissions
GFDL-CM3	r[135]i1p2	Ant	historicalMisc Anth cm3	now	WMGHG from conc, AA from emissions , trop/strat O3 from emissions + ODS conc, LU
GFDL-ESM2G	r1i1p3	noLU	historicalMiscHCP esm2g	now	GHG, SD, Oz, Sl, Vl, SS, BC, MD, OC (GHG includes CO2, CH4, N2O, CFC11, CFC12, HCFC22, CFC113) - CO2 Concentration-driven
GFDL-ESM2G	r1i1p4	noLU	historicalMiscHEP esm2g	now	GHG, SD, Oz, Sl, Vl, SS, BC, MD, OC (GHG includes CO2, CH4, N2O, CFC11, CFC12, HCFC22, CFC113) - CO2 Emission-driven
GISS-E2-H	r[1-5]i1p1	NoAIE	historicalNoAIE	now	
GISS-E2-H	r[1-5]i1p102	Sl	historicalSl	Aug 2012	
GISS-E2-H	r[1-5]i1p103	Vl	historicalVl	June 2012	
GISS-E2-H	r[1-5]i1p104	LU	historicalLU	Aug 2012	
GISS-E2-H	r[1-5]i1p105	Oz	historicalOz	Aug 2012	Strat+Trop From conc
GISS-E2-H	r[1-5]i1p106	AAdirect	historicalAADirect	Aug 2012	anthro tropospheric aerosol: direct effect only (via conc)
GISS-E2-H	r[1-5]i1p107	AA	historicalAA	Aug 2012	anthro tropospheric aerosol: direct + indirect effect only (via conc)
GISS-E2-H	r[1-5]i1p108	BCsnow	historicalBCsnow	Aug 2012	BC on snow only
GISS-E2-H	r[1-5]i1p109	Ant	historicalAnt	Aug 2012	
GISS-E2-H	r[1-5]i1p302*	Sl	historicalSl	Aug 2012	

Model Name	rip number	Simulation shorthand**	Metafor simulation name	Access	Notes
GISS-E2-H	r[1-5]i1p303*	Vl	historicalVl	Aug 2012	
GISS-E2-H	r[1-5]i1p309*	Ant	historicalAnt	Aug 2012	
GISS-E2-H	r[1-5]i1p310*	AA	historicalAA	Aug 2012	anthro trop. aerosol via emissions of SO2, BC, OC, NH3
GISS-E2-H	r[1-5]i1p311*	SLG	historicalSLG	Aug 2012	Anthro tropospheric reactive gases (emissions of NOx, CO, VOCs, CH4)
GISS-E2-H	r[1-5]i1p312*	ODS	historicalODS	Aug 2012	emissions of CFCs
GISS-E2-H	r[1-5]i1p313*	GHGnoCH4	historicalGHGnoCH4	Aug 2012	CO2, N2O, small misc. gases by conc., not CH4
GISS-E2-R	r[1-5]i1p1	NoAIE	historicalNoAIE	Now	
GISS-E2-R	r[1-5]i1p102	Sl	historicalSl	Now	
GISS-E2-R	r[1-5]i1p103	Vl	historicalVl	June 2012	
GISS-E2-R	r[1-5]i1p104	LU	historicalLU	now	
GISS-E2-R	r[1-5]i1p105	Oz	historicalOz	now	Strat+Trop From conc
GISS-E2-R	r[1-5]i1p106	AAdirect	historicalAADirect	June 2012	anthro tropospheric aerosol: direct effect only (via conc)
GISS-E2-R	r[1-5]i1p107	AA	historicalAA	now	anthro tropospheric aerosol: direct + indirect effect only (via conc)
GISS-E2-R	r[1-5]i1p108	BCsnow	historicalBCsnow	June 2012	BC on snow only
GISS-E2-R	r[1-5]i1p109	Ant	historicalAnt	now	
GISS-E2-R	r[1-5]i1p302*	Sl	historicalSl	Aug 2012	
GISS-E2-R	r[1-5]i1p303*	Vl	historicalVl	Aug 2012	
GISS-E2-R	r[1-5]i1p309*	Ant	historicalAnt	June 2012	
GISS-E2-R	r[1-5]i1p310*	AA	historicalAA	Aug 2012	anthro trop. aerosol via emissions of SO2, BC, OC, NH3
GISS-E2-R	r[1-5]i1p311*	SLG	historicalSLG	June 2012	Anthro tropospheric reactive gases (emissions of NOx, CO, VOCs, CH4)

Model Name	rip number	Simulation shorthand**	Metafor simulation name	Access	Notes
GISS-E2-R	r[1-5]i1p312*	ODS	historicalODS	June 2012	emissions of CFCs
GISS-E2-R	r[1-5]i1p313*	GHGnoCH4	historicalGHGnoCH4	June 2012	CO2, N2O, small misc. gases by conc., not CH4
CNRM-CM5	r[1-10]i1p1	Ant	historicalMisc HISTANT	now	GHG, SA, BC, OC (via conc)
NorESM1-M	r1i1p1	AA	historical Aer	now	Aerosol forcing only
FGOALS-g2	r1i1p1	Oz	historical Oz	now	Ozone only forcing (strat+trop)
FGOALS-g2	r2i1p1***	AA	historical Aer	now	Aerosol forcing only SA, BC, Ds, OC, SS (via conc)
IPSL-CM5-LR	r[1-3]i1p1	noLU	Misc/historicalNoLU	2 now, 1 soon	Includes Nat, GHG, SA, Oz, SS, Ds, BC, MD, OC, AA
IPSL-CM5-LR	r[1-3]i1p2	Ant	Misc/historicalAnt	2 now, 1 soon	
IPSL-CM5-LR	r1i1p3	AA	Misc/historicalAA	now	
IPSL-CM5-LR	r[1-4]i1p4	noAA	Misc/historicalNoAA	now	
IPSL-CM5-LR	r[1-5]i1p5	noOz	Misc/historicalNoOz	soon	
IPSL-CM5-LR	r[1-2]i1p6	GHGSA	Misc/historicalGHGSulf	soon	GHG and sulphate aerosols

*For the GISS E2 models, the p3xx and p1xx simulations are produced by model versions that differ in their treatment of aerosols and atmospheric chemistry as described at http://data.giss.nasa.gov/modelE/ar5/.

**Simulation shorthand follows from the controlled vocabulary recommended by CMIP5, but is extended to include some variations: "noXX" implies all forcings except XX (relative to the historical runs), ODS is ozone depleting substances only, GHGnoCH4 is all WM-GHG except for CH4, SLG is "short-lived gases" only, AAdirect is the direct effects of aerosols only, All+AsianAA is all non-aerosol forcings except for those from Asian sources.

*** Note that for this simulation the "r" and "p" values were inadvertently reversed. The rip value should have been "r1i1p2", not "r2i1p1".

Table 2. "historicalMisc" simulations grouped by forcing. The tables include only common simulations performed by more than a single model grouped by single forcings (solar, volcanic, ozone etc.), special combinations (all Natural, or all Anthropogenic effects), and dropping one (or more) forcings from an otherwise full set (relative to the historical runs), i.e. noOz or noLU. Note that the ability to do certain Misc experiments is dependent on whether the model is being driven by concentrations or emissions.

Where there is more than one "p" value for a single model in a table (or, in general, for a more detailed listing of forcings), see Table 1. Note that if one model performed an experiment with a unique set of forcings (or a unique single forcing), that simulation will not appear below, but is listed in the table above.

Single forcing simulations:

Sl (solar only):

GFDL-ESM2M	r1i1p7
CanESM2	r[1-5]i1p3
GISS-E2-R	r[1-5]i1p102
GISS-E2-R	r[1-5]i1p302
GISS-E2-H	r[1-5]i1p102
GISS-E2-H	r[1-5]i1p302

Vl (volcanic only):

GFDL-ESM2M	r1i1p8
GISS-E2-H	r[1-5]i1p103
GISS-E2-H	r[1-5]i1p303
GISS-E2-R	r[1-5]i1p103
GISS-E2-R	r[1-5]i1p303
CSIRO-Mk3.6	r[1-10]i1p6

Oz (ozone only) (trop + strat) (by conc):

GISS-E2-H	r[1-5]i1p105
GISS-E2-R	r[1-5]i1p105
FGOALS-g2	r1i1p1

LU (land use only):

GFDL-ESM2M	r1i1p6
CanESM2	r[1-5]i1p2
GISS-E2-H	r[1-5]i1p104
GISS-E2-R	r[1-5]i1p104

Special collections of forcings:

Ant (all anthropogenic forcings):

GFDL-ESM2M	r1i1p2
CSIRO-Mk3.6	r[1-10]i1p1
GFDL-CM3	r[135]i1p2
GISS-E2-H	r[1-5]i1p109
GISS-E2-H	r[1-5]i1p309
GISS-E2-R	r[1-5]i1p109
GISS-E2-R	r[1-5]i1p309
CNRM-CM5	r[1-10]i1p1
IPSL-CM5-LR	r[1-3]i1p2

AA (anthropogenic aerosol forcings only, may include indirect effects, including BC on snow albedo):

GFDL-ESM2M	r1i1p5
CanESM2	r[1-5]i1p4
CSIRO-Mk3.6	r[1-10]i1p4
GISS-E2-H	r[1-5]i1p107
GISS-E2-R	r[1-5]i1p107
NorESM1-M	r1i1p1
FGOALS-g2	r2i1p1
IPSL-CM5-LR	r1i1p3
GISS-E2-H*	r[1-5]i1p310
GISS-E2-R*	r[1-5]i1p310
GFDL-CM3*	r[135]i1p1

* forced via emissions, not concentrations).

With one forcing omitted:

noLU (all forcings except land use changes):

GFDL-ESM2M	r1i1p3
GFDL-ESM2M	r1i1p4
GFDL-ESM2G	r1i1p3
GFDL-ESM2G	r1i1p4
IPSL-CM5-LR	r[1-3]i1p1

noOz (all forcings except strat+trop ozone forcing):

CSIRO-Mk3.6	r[1-10]i1p2
IPSL-CM5-LR	r[1-5]i1p5

noAA (all forcings excepts anthropogenic aerosols):

CSIRO-Mk3.6	r[1-10]i1p3
CSIRO-Mk3.6	r[1-10]i1p4
IPSL-CM5-LR	r[1-4]i1p4